REVIEWS

Dynamic Symmetry: the Greek Vase. By Jay Hambidge. New Haven and New York: Yale University Press (1920). Pp. 161. $6.00.

For some years Mr. Jay Hambidge has supplemented his strictly artistic work with a mathematical study of the construction of Greek artistic products. He has presented his theories, from time to time, in various series of public lectures; he has illustrated his principles before schools of design and has expounded them to select disciples. Moreover he edits and writes a periodical, called The Diagonal, in which the principles of the theory are developed and applied.

The present volume is the outgrowth of lectures delivered at Yale University on the Trowbridge Foundation, and is the first work published by the Trowbridge Memorial Publication Fund. Mr. Hambidge begins his study with a brief statement of the difference between dynamic (or active) and static (or passive) symmetry. Static symmetry, to which a short final chapter is devoted, consists of the recurrence in design of a single element, such as the square or the equilateral triangle, and is found commonly in Saracenic, Byzantine, Norman, and Gothic art. Dynamic symmetry, which was known only to the Egyptians and to the Greeks, is the principle of the establishment of the "relationship of areas in design-composition".

Mr. Hambidge's thesis, then, is that the principle of Greek design rests on this interrelationship of areas, even though the lines concerned may be, and commonly are, incommensurable. The mathematical elements are set forth in the first three chapters of the book, and are interpreted by the analysis of rectangles. The simplest illustration is found in the case of a rectangle where the square constructed on the end is exactly one-half, in area, of the square constructed on the side. The relationship between these end and side lines of the rectangle, however, is numerically represented by 1 and 1.4142+, which is the square root of two. Thus it is seen that the relationship in line is incommensurable, while, expressed in area, it is perfectly commensurable. A similar proportionate relationship occurs in connection with rectangles where the area of the square constructed on the side is three times, four times, five times, etc., the area of the square on the end, and such rectangles are called respectively root three, root four, root five, etc., rectangles. The numerical relation between the end and the side of a root five rectangle is expressed by 1 and 2.236, which is the square root of five. Closely related to the root five rectangle is a rectangle, the relationship of whose end and side is as 1 to 1.618. This is the proportionate relationship between the figures of a summation series, and is the normal law for leaf distribution on plants. A rectangle constructed on these proportions possesses extraordinary symmetrical qualities, and is called by Mr. Hambidge the rectangle of the whirling squares. The square root of five, 2.236, is 1.618+.618, that is, the root five rectangle equals, in area, a whirling square rectangle plus its reciprocal. The root five rectangle is regarded as the base of dynamic symmetry.

These are all simple, well-known, mathematical principles. Mr. Hambidge's achievement is the application of these principles to the analysis and interpretation of Greek design. The present work is concerned only with one class of products, vases, and the subsequent chapters are devoted to diagrammatical analysis of many examples in various museums. Almost all the measurements were made or checked by officers at these several museums, so that the possibility of mechanical error is minimized. The results are, indeed, amazing. An ordinary Greek vase of usual graceful shape is found to be constructed on an elaborate system of interrelated squares and rectangles with their reciprocals, and diagonals with their perpendiculars, etc., all with a degree of accuracy that is rather appalling to common human nature with its obtrusive frailties. The apprentices and slaves of Greek potters with uniform skill seem to have followed impeccable models, without variation from exactitude by so much as a jot or a tittle.

Mr. Hambidge is applying these same mathematical principles more widely in the study of Greek design and for the past year has been making, in Greece itself, an analysis of the construction of the Greek temple. The development of his results will be awaited with great interest. In the meantime the elements here enunciated are being taught in various schools of design, and are being practiced with most pleasing success in the workshops of some modern commercial studios. It will be an inestimable boon to modern design if the proportion and symmetry, so characteristic in common Greek products, can be again freely produced. Mr. Hambidge has done a great service in pointing out the means to this end. He has also been instrumental in attracting the interest of wider circles than usual to the perfection of Greek design. The student of Greek archaeology will peruse with great care the principles stated and the analyses explained, and, moreover, as mathematics is an exact science, each student can test for himself, to his own complete satisfaction, the applicability of the principles of dynamic symmetry to any particular case with which he may be concerned.

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Titus Pomponius Atticus: Chapters of a Biography. A Dissertation Presented to the Faculty of Bryn Mawr College. By Alice Hill Byrne. Bryn Mawr, Pennsylvania (1920). Pp. viii + 103.

The brief biography of Atticus by Nepos is careless in its handling of fact, deficient in psychological penetration, and characterized by sweeping generalizations which cannot be taken literally. Nevertheless, it has the value of a work by a contemporary of Atticus and contains passages that seem to echo conversations of its author with Atticus. The chief